

CLAIMS

Claim 1. (Original) A diffraction grating comprising a plurality of grooves formed in a substrate with each groove having:

a) a reflective facet having at least one coated region coated with electrically conducting material and at least one uncoated region not coated with electrically conducting material;

b) at least one sidewall to the reflective facet, the sidewall not coated with electrically conductive material.

Claim 2. (Original) A diffraction grating according to claim 1 wherein:

in each reflective facet, said at least one coated region comprises a single coated region, and said at least one uncoated region comprises two uncoated regions on either side of the single coated region.

Claim 3. (Cancelled)

Claim 4. (Cancelled)

Claim 5. (Previously Presented) A diffraction grating according to claim 1 wherein the substrate comprises an optical planar waveguide which consists of at least one layer of high refractive index surrounded on both sides by media of lower refractive index, the plane of said substrate perpendicular to the reflective facet.

Claim 6. (Cancelled)

Claim 7. (Cancelled)

Claim 8. (Cancelled)

Claim 9. (Cancelled)

Claim 10. (Cancelled)

Claim 11. (Original) A diffraction grating comprising a plurality of reflective facets embedded within an optical medium.

Claim 12. (Original) A diffraction grating according to claim 11 wherein the reflective facets form a stepped arrangement.

Claim 13. (Cancelled)

Claim 14. (Previously Presented) A diffraction grating according to claim 11 wherein the optical medium comprises a plurality of grooves in a substrate with each groove having a surface which serves as a reflective facet and also having a sidewall, with material with refractive index similar to that of the substrate deposited in spaces adjoining the facets and sidewalls.

Claim 15. (Original) A diffraction grating according claim 14 wherein the substrate comprises an optical waveguide which consists of at least one layer of high refractive index surrounded by media of lower refractive index, the plane of said substrate perpendicular to the reflective facets.

Claim 16. (Previously Presented) A diffraction grating according to claim 14 wherein the groove-filling material has a layer structure and indices similar to the optical waveguide.

Claim 17. (Previously Presented) A diffraction grating according to claim 14 wherein the groove-filling material is a single material matched in index to the effective index of the optical waveguide.

Claim 18. (Original) A diffraction grating comprising a plurality of grooves in a substrate with each groove having a surface which serves as a reflective facet, and having effectively no sidewalls between the facets, said sidewalls being rendered effectively invisible by the application of material with a refractive index similar to that of the substrate, the application being in the spaces adjoining both the facets and the sidewalls.

Claim 19. (Cancelled)

Claim 20. (Cancelled)

Claim 21. (Original) A diffraction grating according to claim 18 wherein the reflective facets reflect the totality of light incident to the grating.

Claim 22. (Original) A diffraction grating according to claim 18 wherein the reflective facets reflect a substantial fraction of incident light, with light allowed to escape around the edges of the reflecting portions.

Claim 23. (Original) A diffraction grating according to claim 18 wherein the reflective facets reflect a substantial fraction of incident light, with light allowed to escape through small gaps within the otherwise reflecting portions.

Claim 24. (Original) A diffraction grating according to claim 18 wherein the groove-filling material has a layer structure and indices similar to the optical waveguide.

Claim 25. (Original) A diffraction grating according to claim 18 wherein the groove-filling material is a single material matched in index to the effective index of the optical waveguide.

Claim 26. (Original) A diffraction grating according to claim 18 wherein the groove-filling material is an optical material that is transparent to light of a pre-determined wavelength.

Claim 27. (Original) A diffraction grating according to claim 18 wherein the substrate comprises an optical waveguide which consists of at least one layer of high refractive index surrounded by media of lower refractive index, the plane of said substrate being perpendicular to the reflective facet.

Claim 28. (Cancelled)

Claim 29. (Cancelled)

Claim 30. (Cancelled)

Claim 31. (Cancelled)

Claim 32. (Cancelled)

Claim 33. (Cancelled)

Claim 34. (Cancelled)

Claim 35. (Cancelled)

Claim 36. (Previously Presented) A diffraction grating according to claim 1 wherein in each reflective facet, said at least one uncoated region comprises surfaces intermediate between the coated region of the reflective facet and the sidewalls, connecting the reflective facet to the sidewalls.

Claim 37 (Previously Presented) A diffraction grating according to claim 1 wherein each sidewall is transverse the reflective facet.

Claim 38. (Cancelled)